New Leaf Arboriculture Pty Ltd
info@newleaftrees.com.au
PO Box 2554 North Parramatta NSW 1750
ACN 627072619 ABN 86 627072619
www.newleaftrees.com.au

Arboricultural Impact Assessment

25 George Street, North Strathfield

Proposed Residential Development

Prepared for North Strathfield One Pty Ltd

Prepared 18 December 2019

by
Jacki Brown
Arboricultural Consultant
BA, Dip. Hort. (Arb), Dip. Hort. (Landsc.),
Cert. III Cons. & Land Mgmt. (Nat. Area Restoration)
Accredited Member Institute of Australian Consulting Arboriculturists (IACA)
Member International Society of Arboriculture (ISA)

info@newleaftrees.com.au | 1300 157 210
New Leaf Arboriculture Pty Ltd

Executive Summary

This updated Arboricultural Impact Assessment (AIA) report has been prepared for North Strathfield One Pty Ltd, to assist in the assessment of a Development Application to be submitted to Canada Bay Council in relation to residential development works at 25 George Street, North Strathfield.

The proposed development comprises a residential unit complex with associated basement carparking, driveway, and landscape areas as shown on the plans by Fuse Architecture.

This report assesses thirty one (31) trees within and adjacent the property, including six (6) within the nature strip adjoining the property, and one (1) in a neighbouring property. Details of the species, dimensions, health, and condition of the assessed tree are contained in the **Tree Survey Information Table** (page 4).

The impacts resulting from the proposed development are:

- Twenty four (24) trees (**Trees 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29 & 30**) will have major encroachments from the proposed development and will require removal in the context of the development.
- Six Council-owned street trees (**Trees 1, 2, 3, 4, 5 & 6**) of Medium-High significance will have major encroachments from the proposed works within their TPZ areas, and will require tree sensitive design and construction measures, and tree protection devices to sustainably retain the trees.
- One tree (**Tree 31**) on a neighbouring property will have a major encroachment from the proposed development and will require modifications to finished landscape levels to avoid excavation in the TPZ, as well as tree protection measures during works on site.
- The row of trees along the rail corridor boundary are recommended for retention and protection, including tree protection fencing to exclude works from their TPZ areas. These trees should be accurately located by a registered surveyor prior to works commencing, and the Project Arborist should assess the proposed landscape works and excavation to ensure adequate setbacks in accordance with AS4970.

This report recommends tree sensitive design and construction measures to minimise the impacts of the proposed works on the retained trees, and allow for the trees' sustainable retention.

Tree Protection is required at all stages of works including demolition, earthworks, building and landscape works, in accordance with Australian Standard *AS4970-2009 Protection of trees on development sites.*

Contents

1. Introduction

1.1 Summary

This updated Arboricultural Impact Assessment (AIA) report has been prepared for North Strathfield One Pty Ltd, to assist in the assessment of a Development Application to be submitted to Canada Bay Council in relation to residential development works at 25 George Street North Strathfield. The report is prepared in accordance with Australian Standard *AS4970-2009 – Protection of trees on development sites.*

1.2 Purpose

The purpose of this report is to assess the potential impacts of the proposed works on the trees on the site, and detail tree protection measures required for retained trees including tree sensitive design and construction measures.

1.3 The Site

The site is a warehouse block located on the eastern side of George Street, and is surrounded by a mixture of business and residential properties. The property contains a warehouse and associated carpark with landscaped areas containing a mixture of native and exotic trees. The rear of the property adjoins the Main Northern Line railway corridor. The site is currently zoned IN1 – General Industrial.

1.4 The Trees

This report assesses thirty one (31) trees within and adjacent the property, including six (6) within the nature strip adjoining the property, and one (1) in a neighbouring property. Details of the species, dimensions, health, and condition of the assessed trees are contained in the **Tree Survey Information Table** (page 4).

1.5 The Proposed Development

The proposed development comprises a residential unit complex with associated basement carparking, driveway, and landscape areas as shown on the development plans by Fuse Architecture.

2. Background

2.1 Tree Management Controls

Canada Bay Development Control Plan 2013 (DCP) Part 3.8 applies to trees with a height of, or greater than, four (4) metres; the tree has a trunk girth of, or greater than, 500mm at any point; or the tree is a cycad or mangrove, irrespective of its dimensions without a permit granted by the Council.

The trees assessed in this report are subject to the DCP.

2.2 Reference Documents

The following documents were referred to in the preparation of this report:

- Architectural Plan Set, Fuse, Job No.1711, Sheet Nos OPT01_DA101 - DA102, OPT02_DA101 - DA102, Revision No. 11, 15/11/19.
- Landscape Plan, Sturt Noble Associates, Drawing Nos. DA-1934-01 - DA-1934-04, Issue A, 26.11.2019.
- Stormwater Catchment Plan, Calibre, Project No. 19-000925, Drawing No. C4-60, Revision A, 13/12/19.
- Australian Standard *AS4373-2007 Pruning of amenity trees*.

- Australian Standard *AS4970-2009 Protection of trees on development sites*.
- Canada Bay Development Control Plan 2013 *Part 3.8 Preservation of Trees and Vegetation*.
- Canada Bay Local Environmental Plan 2013.
- *State Environmental Planning Policy (Vegetation in Non-Rural Areas) 2017.*

3. Tree Assessment Methodology

3.1 Limitations and Assumptions

The recommendations in this report rely on the provided information, including architectural plans and documents, limited to those listed in **2.2 Reference Documents**.

Care has been taken to obtain all information from reliable sources; however the author makes no representations, guarantees or warranties as to the accuracy of information provided by others. Similarly, no warranties are made as to the accuracy or completeness of any reproduction of this report. This report is only valid in its entirety and for the purpose for which it was prepared.

Conditions on the site may change after the tree assessment. Liability will not be accepted for damage or injury as a result of unforeseeable events or natural processes.

This report does not constitute or include a tree risk assessment. Where defects are noted, these are recommended for further investigation where warranted. Other tree defects may be present which have not been noted.

3.2 Tree Assessment

Visual tree assessment was carried out by Jacki Brown, Arboricultural Consultant in September 2016. An updated on site assessment has not been carried out. The tree inspection was limited to a visual assessment from ground level, without excavation, coring, drilling, climbing or other testing. Trunk diameters were measured using a standard tape measure, crown spreads were paced out on site, and tree heights were estimated by eye.

The Arboricultural Impact Assessment utilises the Australian Standard *AS4970-2009 Protection of trees on development sites*.

3.3 Tree Survey Data

Refer to the Tree Survey Information Table (page 4).

Useful Life Expectancy (ULE) ratings are given for each tree, of either Long (40+ years), Medium (15-40 years), Short (5-15 years) or Remove (less than 5 years). The ratings are estimates based on the assessed health, condition and structure of each tree at the time of assessment, in its specific location. The ratings are not static, and may be revised during future assessments if conditions change.

Significance ratings are given for each tree, based on their Amenity Value, Ecological Value, size and location. While High significance trees provide substantial values to their surroundings, Low and Medium significance trees also contribute to the Urban Forest and in many cases may grow to become High significance trees, given the opportunity.

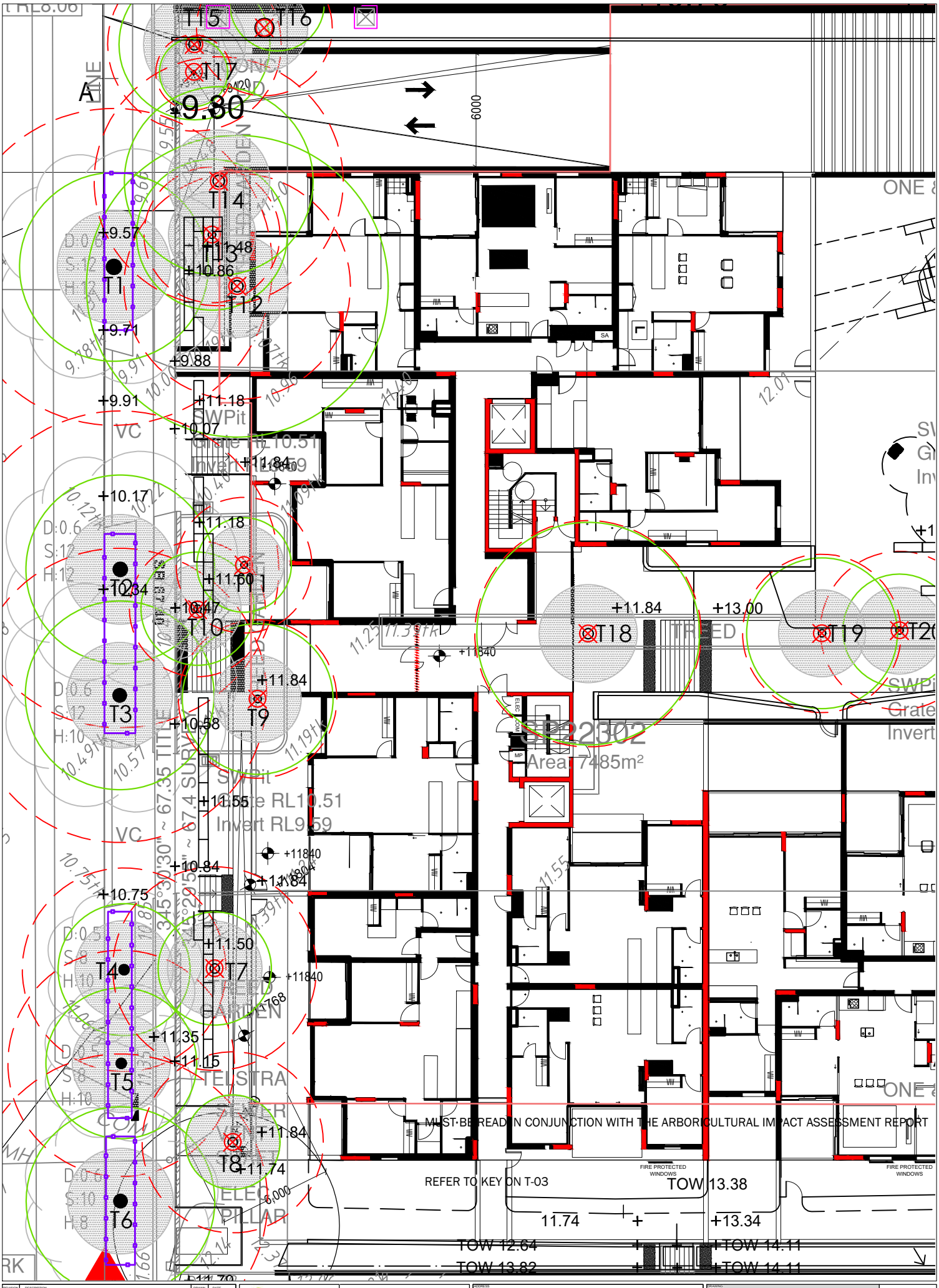
An ***Ecological Value*** rating of High, Medium or Low has been assigned to each tree, based on the species and potential habitat values, however this should not be taken as ecological advice.

Tree No.	Botanical & Common Name	Height	Spread	Multi Stem DBH (mm)	DBH (mm)	DRB (mm)	Age	Health	Condition	ULE	Significance	Amenity Value	Ecological Value	SRZ	TPZ	Site Notes	Development Encroachment	Development Impact
1	*Melaleuca quinquenervia* Broad Leaf Paperbark	13	10		700	800	M	Av	Av	M	M-H	M-H	M	3.0	8.4	Small foliage, somewhat sparse. Suppressed by Corymbia. Dieback. Exposed roots damaged. Narrow verge. Included unions.	31%	3.2m from proposed landscape works, 5m from proposed driveway crossover, 5.6m from proposed basement. Major encroachment within TPZ. Project Arborist involvement required.
2	*Melaleuca quinquenervia* Broad Leaf Paperbark	13	10		700	750	M	Av	Av	M	M-H	M-H	M	2.9	8.4	Small foliage, somewhat sparse. Exposed roots damaged. Narrow verge. Deadwood to 50mm. Compacted soil.	29%	2.9m from proposed landscape works, 3.9m from proposed path. Major encroachment within TPZ. Project Arborist involvement required.
3	*Melaleuca quinquenervia* Broad Leaf Paperbark	11	10		650	700	M	Av	Av	M	M-H	M-H	M	2.8	7.8	Sparse. Small deadwood. Dieback. Exposed roots damaged. Compacted soil. Concrete lifting adjacent. Pruned over road.	26%	2.9m from proposed landscape works. Major encroachment within TPZ. Project Arborist involvement required.
4	*Melaleuca quinquenervia* Broad Leaf Paperbark	12	7		450	550	M	Av	G	M-L	M-H	M-H	M	2.6	5.4	Exposed roots damage. New shoots - more vigorous. Compacted soil. Small deadwood. Dense vegetation adjacent.	19%	2.7m from proposed landscape works. Major encroachment within TPZ. Project Arborist involvement required.
5	*Melaleuca quinquenervia* Broad Leaf Paperbark	11	8		500	550	M	G	G	M	M-H	M-H	M	2.6	6.0	Suckers from base. Epicormics. Deadwood to 50mm. Compacted soil. Large exposed roots damaged gutter side.	21%	2.9m from proposed terraced landscape works. Major encroachment within TPZ. Project Arborist involvement required.
6	*Melaleuca quinquenervia* Broad Leaf Paperbark	12	10		650	700	M	Av	Av	M	M-H	M-H	M	2.8	7.8	Small foliage, sparse. Dieback. Deadwood to 50mm. Exposed roots damaged. Dense vegetation adjacent. 3 stems from 2m - wound @ junction - possible cavity. Bitumen path @base. Wounds on branch over road - possible decay column & on main upright leader with bulge.	23%	2.9m from proposed landscape works & electricity substation. Major encroachment within TPZ. Project Arborist involvement required & non-destructive excavation for electricity cables.
7	*Schinus areira* Peppercorn	8	6		450	500	M	Av	Av	M	L-M	L-M	L	2.5	5.4	In dense vegetation in garden bed. Branches pruned street side. Epicormics. Sparse. 3 stems from 1m.	47%	Major encroachment from proposed building footprint & within proposed path.
8	*Schinus areira* Peppercorn	9	5		400	500	M	Av	Av	M	L-M	L-M	L	2.5	4.8	In dense vegetation. Sparse. Leans North. 2 stems from 1m.	100%	Within proposed walkway.
9	*Schinus areira* Peppercorn	8	8		350	400	SM	P	Av	M	M	L-M	L	2.3	4.2	Pruned. Sparse. Epicormics. Vine in crown.	100%	Within proposed building footprint.
10	*Schinus areira* Peppercorn	8	6		300	400	SM	Av	Av	S-M	M	L-M	L	2.3	3.6	Sparse. Vine in crown. Deadwood. Bolts @base of trunk. Pruned street side. Suppressed by street trees.	65%	Major encroachment from proposed building footprint on 2 sides.
11	*Schinus areira* Peppercorn	6	5		300	350	SM	G	Av	S-M	M	L-M	L	2.1	3.6	Suppressed by T10. Vine in crown. Pruned. Sparse.	44%	Major encroachment from proposed building footprint & within proposed fill.
12	*Corymbia maculata* Spotted Gum	18	16		500	600	M	Av	G	L	M-H	M-H	M	2.7	6.0	Bark expansion crack (normal). Deadwood to 80mm.	100%	Within proposed walkway.
13	*Syzygium australe* Lilly Pilly	10	8		300	400	M	Av	Av	S-M	M	M	M	2.3	3.6	Lopped @1.5m - wound & decay column. Dogleg branch assuming dominance. Deadwood. Most of crown to street. Suppressed by T12 & 14.	39%	Major encroachment from proposed building footprint & within proposed path.

Tree No.	Botanical & Common Name	Height	Spread	Multi Stem DBH (mm)	DBH (mm)	DRB (mm)	Age	Health	Condition	ULE	Significance	Amenity Value	Ecological Value	SRZ	TPZ	Site Notes	Development Encroachment	Development Impact
14	*Lophostemon confertus* Brush Box	12	10		550	600	M	G	Av	L	M	M-H	M	2.7	6.6	2 stems from 2m. Pruned. Deadwood to 50mm. Basal wound & wounds on trunk @1m & 2.5m. Heartwood appears sound.	100%	Within proposed building footprint.
15	*Celtis sp.* Hackberry	8	8	250 / 200 / 150 / 150	380	600	SM	Av	Av	M	L	L	L	2.7	4.6	Likely self sown. Multi stem.	100%	Within proposed building footprint.
16	*Schinus areira* Peppercorn	5	5	100 / 150	180	1000	OM	Av	P	S	L	L	L	3.3	2.2	Large stump with 150mm suckers. Crown skewed to NE. Basal decay. Remove tree.	41%	Major encroachment from proposed driveway at base. Tree unsuitable for retention.
17	*Hymenosporum flavum* Native Frangipani	9	4		150	200	SM	G	Av	M	L	L	M	1.7	2.0	Suppressed. Small crown volume.	100%	Within proposed driveway.
18	*Eucalyptus tereticornis* Forest Red Gum	15	12		500	550	M	G	P	S	M	M	M	2.6	6.0	Wounds with likely decay column. Further investigation required if retained. Pruned. Reduce SE upright branch.	100%	Within proposed building footprint.
19	*Eucalyptus punctata* Grey Gum	10	8		350	400	M	G	Av	M	M	M	M	2.3	4.2	Leans SW. Large epicormics on main branches. Wounds @base. Deadwood to 30mm.	100%	Within proposed building footprint.
20	*Eucalyptus punctata* Grey Gum	10	6		350	400	M	Av	Av	S-M	M	M	M	2.3	4.2	Deadwood, dieback. Codominant @2.5m - no inclusion. Large epicormics. Wound on NE main branch.	100%	Within proposed building footprint.
21	*Eucalyptus punctata* Grey Gum	13	10		450	500	M	G	P	S	M	M	M	2.5	5.4	Most of crown to N. Deadwood to 50mm. Partially ringbarked @base - borer. Insect spots on trunk & branches. Wounds @ junctions.	100%	Within proposed building footprint.
22	*Eucalyptus punctata* Grey Gum	11	8		300	400	SM	Av	Av	M	M	M	M	2.3	3.6	Wound on trunk @0.5-1m. Insect spots on branches. Horizontal wounds on trunk. Deadwood, dieback. Hanger. Secondary branch @1m with inclusion.	100%	Within proposed building footprint.
23	*Eucalyptus punctata* Grey Gum	15	14		500	600	M	Av	Av	M	M-H	M-H	M	2.7	6.0	Dominant crown. Deadwood to 80mm. Epicormics. Dieback. Phoenix @base - N side of trunk inaccessible.	100%	Within proposed building footprint.
24	*Casuarina cunninghamiana* River She Oak	14	8		350	400	M	G	G	M-L	M	M	M	2.3	4.2	Suckers. Wounds @base. Low branches pruned. On mound next to carpark.	100%	Within proposed building footprint.
25	*Casuarina cunninghamiana* River She Oak	14	6	200 / 250 / 100 / 50	340	400	M	G	G	M	M	M	M	2.3	4.1	Multistem from base. Crossing branches.	100%	Within proposed building footprint.
26	*Casuarina cunninghamiana* River She Oak	14	8	250 / 200	320	600	M	G	G	M-L	M	M	M	2.7	3.8	Multi stem or 2 trees. Small trunks growing between - wedge effect.	22%	Major encroachment from proposed building footprint & within proposed external excavation.
27	*Melaleuca bracteata* Black Tea Tree	9	6		250	300	M	Av	Av	S-M	L	L	M	2.0	3.0	Pruned.	100%	Within proposed building footprint.

Tree No.	Botanical & Common Name	Height	Spread	Multi Stem DBH (mm)	DBH (mm)	DRB (mm)	Age	Health	Condition	ULE	Significance	Amenity Value	Ecological Value	SRZ	TPZ	Site Notes	Development Encroachment	Development Impact
28	*Melaleuca bracteata* Black Tea Tree	6	5		100	300	M	Av	Av	S-M	L	L	M	2.0	2.0	Branches lopped @base.	14%	Major encroachment from proposed building footprint & within proposed external excavation.
29	*Melaleuca bracteata* Black Tea Tree	8	6	100 / 150	180	300	M	Av	Av	S-M	L	L	M	2.0	2.2	Suppressed by surrounding trees.	31%	Major encroachment from proposed building footprint & within proposed external excavation.
30	*Melaleuca bracteata* Black Tea Tree	8	8	300 / 300	420	600	M	Av	Av	S-M	L	L	M	2.7	5.0	Blackened foliage. Multi stem. Low branches pruned.	44%	Proposed building footprint at base - major encroachment.
31	*Cinnamomum camphora* Camphor Laurel	14	10	550 / 450	710	1100	M	G	G	M-L	M	M-H	L	3.4	8.5	On neighbouring property against boundary.	46%	Major encroachment from proposed landscape walls & regrading. Maintain existing soil levels in TPZ to avoid fatally harming or destabilising this tree.

Key: Height (in metres) ; Spread (crown spead in metres) ; DBH (Diameter at Breast Height / 1.4m) in millimetres ; DRB (Diameter above Root Buttress) in millimetres ; Age (Semi-mature, Mature, Overmature, or Senescent) ; Health (Good, Average or Poor) ; Condition (Good, Average or Poor) ; Useful Life Expectancy (ULE) (Short, Medium or Long) ; Significance (High, Medium or Low) ; Amenity Value (High, Medium or Low) ; Ecological Value (High, Medium or Low) ; SRZ (Structural Root Zone) radius in metres ; TPZ (Tree Protection Zone) radius in metres

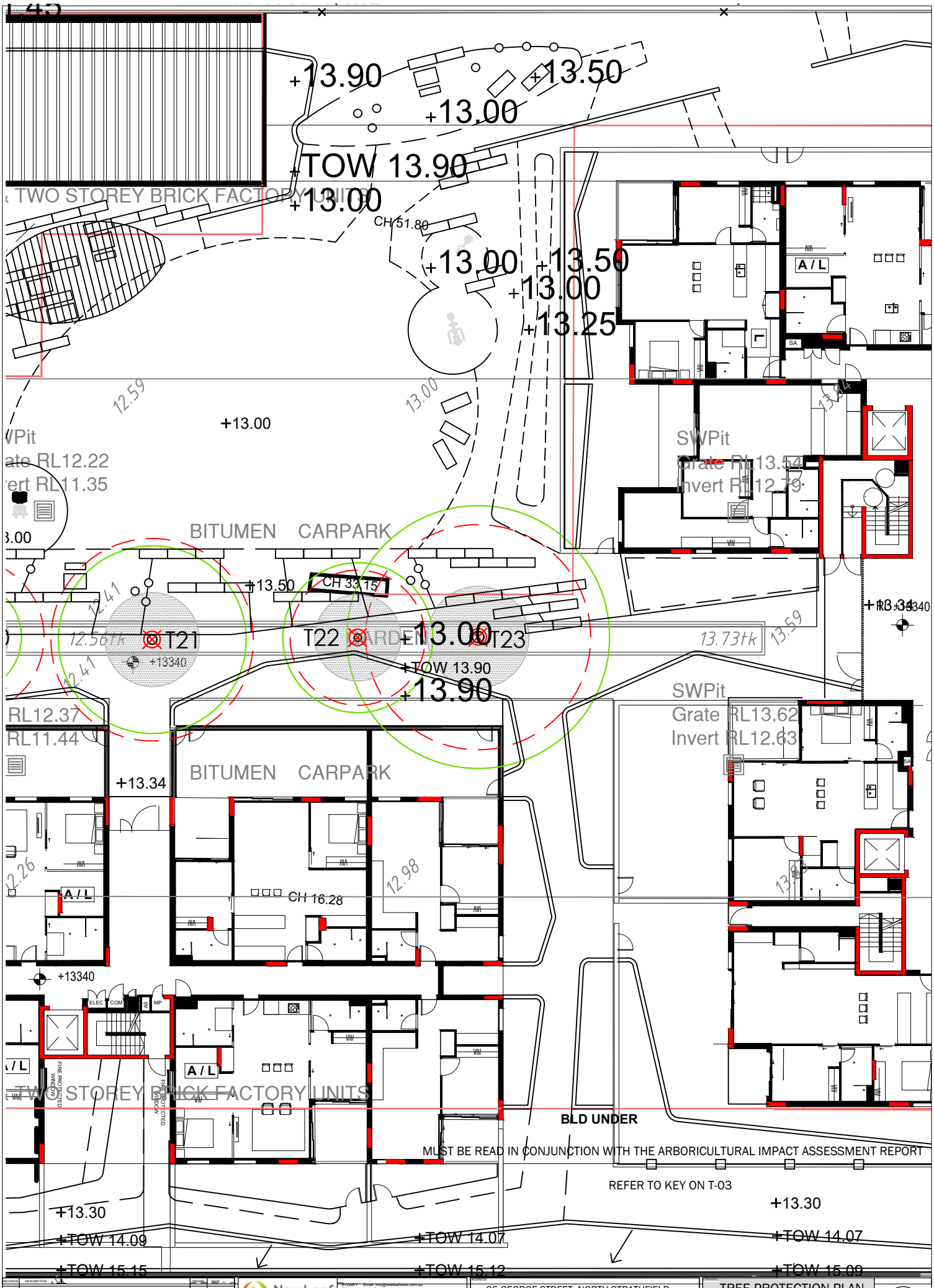


REVISION	DESCRIPTION	DRAWN	DATE
A	ARBORICULTURAL IMPACT ANALYSIS - FOR REPORT	JB	22-09-16
B	REVISED DESIGN & ARB. IMPACT - FOR UPDATED REPORT	JB	17-12-19

NewLeaf ARBORICULTURE
SYDNEY Email: info@newleaftrees.com.au
Web: www.newleaftrees.com.au
JACKI BROWN
Accredited Member of the Institute of Australian Consulting Arboriculturists
Member of the International Society of Arboriculture

ADDRESS: 25 GEORGE STREET, NORTH STRATHFIELD
PROJECT: PROPOSED RESIDENTIAL UNITS DEVELOPMENT
CLIENT: NORTH STRATHFIELD ONE PTY LTD

DRAWING: TREE PROTECTION PLAN
SCALE: 1:250 @ A4
ISSUE: DA
SHEET: T - 01 of 3
DRAWN: JB
DATE: 17-12-19
REVISION: B



REVISION	DESCRIPTION	DRAWN	DATE
A	ARBORICULTURAL IMPACT ANALYSIS - FOR REPORT	JB	22-09-16
B	REVISED DESIGN & ARB. IMPACT - FOR UPDATED REPORT	JB	17-12-19

NewLeaf ARBORICULTURE
BY ONE Y Email: info@newleaftrees.com.au
Web: www.newleaftrees.com.au
JACKI BROWN
Accredited Member of the Institute of Australian Consulting Arboriculturists
Member of the International Society of Arboriculture

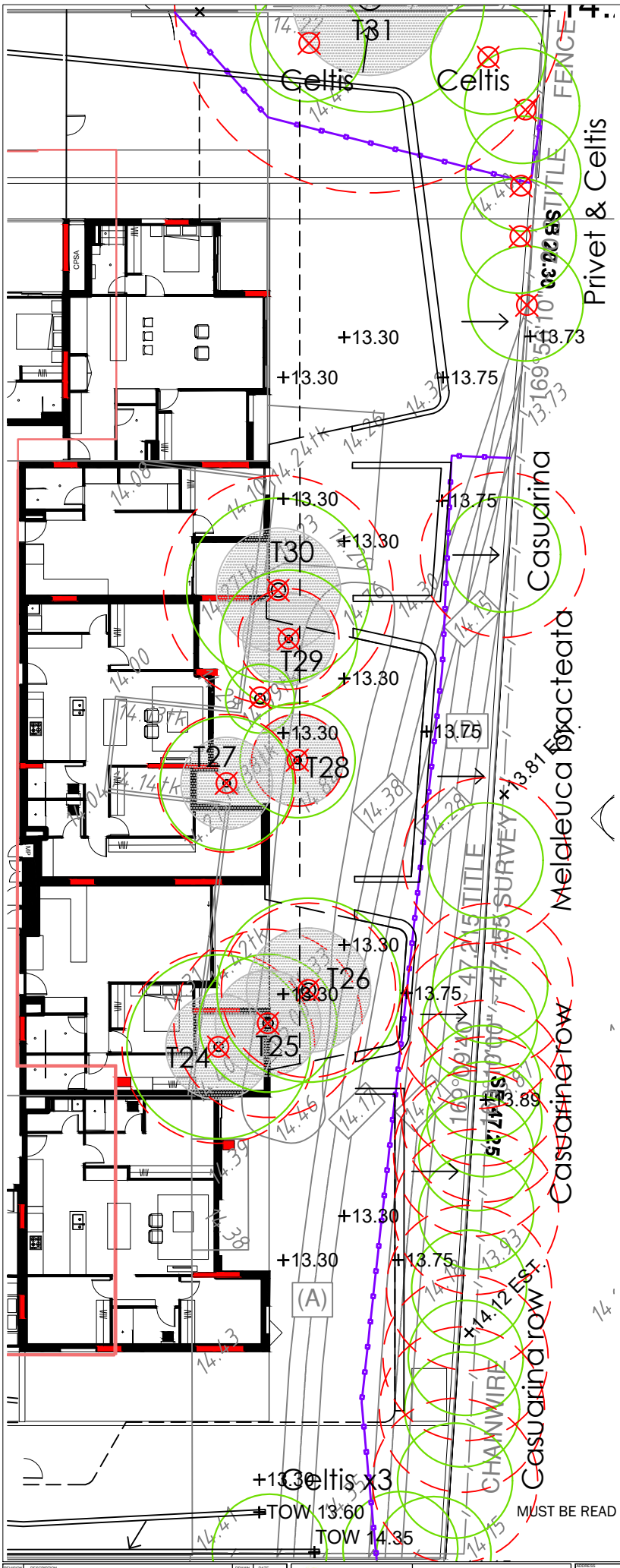
1. Do not scale from drawings
2. Verify all measurements on site
3. Notify New Leaf of any inconsistencies

5. Drawing remains the property of New Leaf Arboriculture Pty Ltd.

ADDRESS: 25 GEORGE STREET, NORTH STRATHFIELD
PROJECT: PROPOSED RESIDENTIAL UNITS DEVELOPMENT
CLIENT: NORTH STRATHFIELD ONE PTY LTD

DRAWING: TREE PROTECTION PLAN

SCALE	ISSUE	SHEET
1:250 @ A4	DA	T - 02 of 3
DRAWN: JB	DATE: 17-12-19	REVISION: B



MUST BE READ IN CONJUNCTION WITH THE ARBORICULTURAL IMPACT ASSESSMENT REPORT

REVISION	DESCRIPTION	DRAWN	DATE
A	ARBORICULTURAL IMPACT ANALYSIS - FOR REPORT	JB	22-09-16
B	REVISED DESIGN & ARB. IMPACT - FOR UPDATED REPORT	JB	17-12-19

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SYDNEY Email: info@newleaftrees.com.au
Web: www.newleaftrees.com.au
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ADDRESS: 25 GEORGE STREET, NORTH STRATHFIELD
PROJECT: PROPOSED RESIDENTIAL UNITS DEVELOPMENT
CLIENT: NORTH STRATHFIELD ONE PTY LTD

DRAWING: TREE PROTECTION PLAN
SCALE: 1:250 @ A4
ISSUE: DA
SHEET: T - 03 of 3
DRAWN: JB
DATE: 17-12-19
REVISION: B

6. Observations and Discussion

6.1 Trees Within the Proposed Development Footprint

There are fifteen (15) trees (**Trees 8, 9, 12, 14, 15, 17, 18, 19, 20, 21, 22, 23, 24, 25, & 27**) located within the footprint of the proposed development, and in the context of the current proposal, these trees will require removal. Due to the extent of proposed development, design modifications to retain these trees are not possible in the current layout.

Medium to High Significance Tree Proposed to be Removed

Two (2) large native trees (**Trees 12 & 23**) are located within the proposed building footprint and will require removal. These trees are the dominant trees in groups of trees within the site, however in the layout of the proposed development it will not be possible to retain these trees.

Medium Significance Tree Proposed to be Removed

Nine (9) medium and large trees (**Trees 9, 14, 18, 19, 20, 21, 22, 24, & 25**) are located within the proposed building footprint and will require removal. Of these trees, Trees 14, 19, 24 and 25 are somewhat suitable for retention, but have some defects. The other trees have reduced useful life expectancies due to defects or reduced health and/or condition.

Low to Medium Significance Tree Proposed to be Removed

One (1) medium tree (**Tree 8**) is located within the proposed building footprint and will require removal. This tree is sparse and growing amongst other dense vegetation, with a lean to the north.

Low Significance Tree Proposed to be Removed

Three (3) medium trees (**Trees 15, 17 & 27**) are located within the proposed building footprint and will require removal. **Tree 15** is a weed species, and **Trees 17** and **27** are approximately at their maximum size for their species.

6.2 Trees with Major Encroachment from the Proposed Development

Sixteen (16) trees (**Trees 1, 2, 3, 4, 5, 6, 7, 10, 11, 13, 16, 26, 28, 29, 30, & 31**) will have major encroachments from the proposed development, and can be retained by utilising tree protection and tree sensitive construction methods, as described below.

Medium to High Significance Tree Proposed to be Retained

The six (6) medium sized *Melaleuca quinquenervia* (Broad Leaf Paperbark) street trees (**Trees 1, 2, 3, 4, 5, & 6**) are located in the narrow verge in front of the site, with proposed development works within their TPZ areas. Due to their location next to the road, the root zones of these trees are unlikely to be symmetrical, so works on the property side need to be done with tree sensitive construction measures within the nominal TPZ areas to minimise potential impacts.

Careful demolition and excavation will be required with Project Arborist attendance, for the front setback landscape works. No roots greater than 40mm diameters should be damaged or cut. If larger roots are encountered the Project Arborist should be engaged to determine whether root pruning is acceptable, or to coordinate a method of installing the wall around the root/s.

Crown pruning of these trees is not required and should not be carried out, with the exception of normal maintenance pruning such as pruning of deadwood and broken branches. Any pruning needs to be done by an AQF Level 3 qualified arborist.

Medium Significance Tree Proposed to be Removed

Three (3) medium sized trees (**Tree 10, 11 & 26**) are located close to the proposed building footprint and will require removal.

Medium Significance Tree Proposed to be Retained

One (1) medium sized *Cinnamomum camphora* (Camphor Laurel) tree (**Tree 31**) is located in the neighbouring property, and has proposed landscape walls and regrading within its TPZ area.

The proposed landscape works in the TPZ of this tree will require modification to avoid destabilising or fatally harming this tree. All excavation within the TPZ of this tree needs to be avoided, including regrading, retaining walls, underground services and structures.

Low to Medium Significance Tree Proposed to be Removed

One (1) medium sized, sparse *Schinus areira* (Peppercorn) tree (**Tree 7**) in average health and condition is located less than one metre from the proposed building, and within the proposed path.

Low Significance Tree Proposed to be Removed

Five (5) small and medium sized trees (**Tree 15, 16, 28, 29, 30**) are located in close proximity to the proposed building and driveway footprints, and will require removal.

Suitable replacement trees should be planted on site to offset the loss of canopy cover.

6.3 Additional Trees Not on Survey

Rows of Casuarina trees are located along the rear boundary, mostly outside the chainwire fence. These trees were not shown on the site survey so their locations have not been verified. The trees consist of multiple suckers from larger trees, and therefore the trees were not fully assessed at the time of the inspection.

Using estimated DBH trunk diameters of up to 300mm, approximate TPZ areas are shown on the Tree Protection Plan. The proposed landscape walls and associated excavation would be within the estimated TPZ areas of these trees. The landscape walls and any associated regrading and excavation should be moved outside of the TPZ areas to minimise the potential impacts on these trees. New rear boundary fence should be lightweight construction, without regrading or strip footings, to allow these trees to be sustainably retained and continue to provide screening between the proposed dwellings and the rail corridor.

Prior to works commencing, the trunk diameters should be measured by the Project Arborist, to ensure that adequate setbacks from any excavation are provided. Underground services should not be routed within the TPZ areas of these trees.

Tree protection fencing will be required throughout development works, and mulch should be applied inside the whole fence area. Ground protection would be needed for any TPZ area which can't be fenced. Ground protection should be in the form of 100mm mulch overlaid with trackmats, rumbleboards, steel plates or equivalent.

6.4 Trees Recommended for Removal for Landscape Purposes

Various small weed species trees, mostly *Celtis sp.* and Privet, which appear to have self sown, are located around the rear boundaries of the site, and are recommended for removal and replacement with suitable native tree species.

7. Recommendations

7.1 Tree Removal

- Remove **Trees 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, & 30** as they have major encroachments from the proposed development.

7.2 Tree Retention

- Retain and protect **Trees 1, 2, 3, 4, 5, 6, & 31** as specified below and on the Tree Protection Plan.

7.3 Tree Protection Devices

- Install tree protection fencing around the TPZ areas as shown on the Tree Protection Plan, to exclude construction access from tree protection areas. Maintain the fencing in situ throughout works.
- Any relocation (including temporary) of tree protection fencing needs Project Arborist involvement.
- Ground protection in the form of steel plates, rumbleboards, trackmats or equivalent over 100mm depth of mulch, is required for any area of TPZ which can't be enclosed by fencing.
- Trunk protection to **Trees 1, 2, 3, 4, 5 & 6** to ensure no damage occurs to the trunks. Trunk protection should be in the form of jute or thick hessian material wrapped loosely around stems and main branches, with timber battens strapped around the stem at 100mm centres.

7.4 Tree Sensitive Construction Measures

- A Project Arborist with AQF5 qualification in arboriculture needs to be appointed prior to works commencing.
- Demolition works in the TPZ areas of **Trees 1-6** will need Project Arborist attendance and inspection of the soil prior to earthworks, to assess whether roots of these trees are within the footprint of any proposed excavation.
- Crane hoisting will only be able to be done from vehicles parked on either of the two vehicle crossovers, as the branches of the street trees (**Trees 1-6**) overhang the roadway in front of the site.
- Avoid damage to roots of 40mm diameter or greater by locating all works and services outside the TPZ areas of retained trees. If roots greater or equal to 40mm are encountered stop works and contact the Project Arborist or Council Tree Management Officer to assess and advise on root management.

7.4 Project Arborist Involvement

- Engage a Project Arborist (with a minimum AQF Level 5 qualification in arboriculture and experience in providing project arborist services on similar projects) to inspect tree protection measures, monitor tree health and condition, throughout works at regular intervals and at completion, and if any tree protection is to be moved and/or if any additional works near trees is proposed, and/or if trees are damaged.
- Project Arborist will need to attend during any excavations and construction within the TPZ of **Trees 1, 2, 3, 4, 5, 6 & 31**.

7.5 Replacement Tree Planting

- Install at least eighteen (18) medium to large (8m minimum mature height) and five (5) small (5m minimum mature size) replacement trees into the deep soil areas on site. Plant the trees from minimum 75L containers, in suitably prepared and improved site soil within the property to offset the loss of tree canopy, as shown on

the landscape plans. Trees should be high quality nursery grown plant stock and planted by persons with horticultural qualifications. The trees should be maintained to maturity.

The recommendations of this report do not constitute consent to carry out works. Approval is required in the form of Development Consent to prune or remove trees, as well as the consent of the tree owner where trees are on neighbouring properties.

Further information and clarification can be obtained from the author.

Jacki Brown
Arboricultural Consultant
New Leaf Arboriculture Pty Ltd
ABN 86 627072619
jacki@newleaftrees.com.au
0415 550 284

NewLeaf
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